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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/081,355

02/21/2002

Krishnasamy Anandakumar

TI-29773

9762

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7590

12/10/2007

TEXAS INSTRUMENTS INCORPORATED

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EXAMINER

RIDER, JUSTIN W

ART UNIT

PAPER NUMBER

2626

NOTIFICATION DATE

DELIVERY MODE

12/10/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/081,355	Applicant(s) ANANDAKUMAR ET AL.	
	Examiner Justin W. Rider	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) 3, 6 and 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-2, 4-5 and 7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

1. In response to the Office Action mailed 05 September 2007, applicant submitted a response filed 21 September 2007, in which the applicant amended claims 1, 4 and 7 without adding new matter. Applicant cancelled claims 3, 6 and 8.

Response to Remarks

2. Applicant's arguments with respect to claims 1-2, 4 and 7 have been considered but are moot in view of the new ground(s) of rejection.

With respect to applicants remarks under section 2 on page 4, under the heading Remarks/Arguments, applicant argues that the shortening and lengthening of **Schuster** differs from that of truncating and expanding with respect to newly amended claim 1. However, the examiner does not agree with this assessment. Both applicant and **Schuster** disclose payout of audio of packetized networks wherein expansion [lengthening, uncompressing] as well as truncation [shortening, compressing] are taking place with respect to the transmission and payout of said audio data.

With respect to applicants remarks concerning claim 2 under section 3 on page 4, under the heading Remarks/Arguments, applicant asserts that truncation occurs within **Murgia** for purposes of bit rate reduction (to an excitation signal) as opposed to some other reason not clear to the examiner to be performed on an excitation signal. However, looking at column 16 line 62, truncation is occurring to an excitation signal for purposes of improving transmission characteristics over a network.

With respect to applicants remarks concerning claim 4 under section 4 on page 4, under the heading Remarks/Arguments, applicant remarks that the disclosure of **Ananthapadmanabhan**, 'relates to encoding, not decoding.' However, there is not specific claim language pertaining to a differentiation between decoding and encoding. In addition, **Ananthapadmanabhan** discloses wherein this process takes place in a coder in which the operation could take place on either side of the transmission operation.

With respect to applicants remarks concerning claim 7 under section 4 on page 5, under the heading Remarks/Arguments, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by **Schuster et al.** US Patent No. 6,175,871 referred to as **Schuster** hereinafter.

Claim 1: **Schuster** discloses a method for playout of packetized speech, comprising:

- i. expanding an active frame according to a voicing classification for said active frame (col. 15, lines 63-66, *'the buffer changes state from the Normal state 354 to the Fill state 352 as shown in transition 358. The objective of the Fill state is to bring the buffer depth back to the Normal state 354.'*);
- ii. deferring truncation of an active frame (col. 15, line 58 - col. 16, line 15, *'The objective of the state diagram 350 is to maintain the buffer in its Normal state 354...As long as the buffer depth stays between Low and High watermarks, the buffer state remains in the Normal state 354.'*); and
- iii. truncating [shortening] silence frames (col. 16, lines 8-10, *'The objective of the Drain state 356 is to shorten the silence periods and therefore reduce the buffer depth until it is returned to the Normal state 354.'*).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Schuster** in view of **Murgia et al. (US Patent No. 6,369,722)** referred to as **Murgia** hereinafter.

Claim 2: **Schuster** discloses the method as per claim 1 above, wherein packetized speech includes CELP-encoded frames (col. 8, lines 5-15).

However, while **Schuster** does disclose shortening, draining or truncating frames, **Schuster** fails to, but **Murgia** does, specifically disclose wherein said truncating a silence frame includes truncating an excitation for said silence frame (col. 16, lines 60-66, *'In the first mode, the coder truncates to Q-p bits the index of the CELP excitation vector as explained above, and the decoder reconstitutes an excitation on the basis of the truncated index.'*)

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to include the teachings of **Murgia** in the method of **Schuster** because it provides a fine digital scaling adjustment, allowing an optimal trade between bit rate and transmission quality (col. 2, lines 5-10).

7. Claims 4-5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Schuster** in view of **Chen** (US Patent No. 6,351,730) referred to as **Chen** hereinafter, and further in view of **Ananthapadmanabhan et al.** (US Patent No. 6,393,394) referred to as **Ananthapadmanabhan** hereinafter.

Claim 4: **Schuster** discloses a method of frame playout expansion, comprising classifying an active frame as voiced or not (col. 8, lines 35-50).

However, while **Schuster** does disclose expanding or filling frames, **Schuster** fails to, but **Chen** does, specifically disclose a packetized coding system wherein frames are filled using pitch characteristics (col. 19, lines 6-8, *'treat it as the pitch period, and periodically repeat the previous waveform at that pitch period to fill in the current frame of waveform.'*).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to include the teachings of **Chen** in the method of **Schuster** because it provides an

adaptive codec that utilizes characteristics (e.g. pitch, pitch period, frame filling) that are common knowledge to one skilled in the art of speech coding in order to provide reconstructed speech while reducing coding complexity and delays (col. 3, lines 23-35).

Schuster, in view of **Chen** discloses the method as per claim 4 above, describing the detection of different frame classifications (e.g. voiced or non-voiced [silence]) however failing to but **Ananthapadmanabhan** does, in teaching a speech coding method, specifically disclose performing certain coding techniques based on frame classification type (col. 11, lines 30-38, *'This decision is advantageously based upon the speech content of the frame. For example, LSI parameters for stationary voiced frames are quantized to best advantage with an MA prediction-based VQ method, while LSI parameters for unvoiced frames and transition frames are quantized to best advantage, ').*

Further, while **Ananthapadmanabhan** fails to disclose the specific operation of performing expansion of an unvoiced frame based on a fixed codebook vector, **Ananthapadmanabhan** does disclose performing a different coding technique on a frame based solely on the classification of said frame. It would have been obvious to one having ordinary skill in the art at the time of invention that if different coding techniques are performed on a frame based on the signal (e.g. voiced, unvoiced, transitional), than it would be well known to perform expansion based on this fact as well. In addition, altering a frame based on a fixed codebook vector is well known in the art to provide a more accurate reconstruction of an input speech signal.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to include the teachings of **Ananthapadmanabhan** in the method of **Schuster**, in

view of **Chen** because **Ananthapadmanabhan** recites a speech codec that uses multiple methods to adapt to changes between periodic and nonperiodic frames to provide an advantageous codec that can accurately reconstruct input speech using adaptive linear predictive filtering (col. 4, lines 40-60).

Claim 5: **Schuster** discloses the method as per claim 4 above, wherein packetized speech includes CELP-encoded frames (col. 8, lines 5-15).

However, while **Schuster**, in view of **Chen** discloses expanding or filling frames, both **Schuster** and **Chen** fail to specifically point out the use of the excitation being the signal expanded. The examiner is taking Official Notice that it would have been obvious to one having ordinary skill in the art at the time of invention that the excitation signal would be altered, filled or expanded to complete a speech signal to be constructed. It is common knowledge in CELP coding that the excitation signal is the final signal reproduced before synthesis and so therefore, excitation expansion would be the obvious choice as it is the main signal to be synthesized.

Claim 7: **Schuster** discloses a receiver, comprising:

- i. an input for receiving CELP-encoded frames (FIG. 2, **96 & 97**, 'Data Packets');
- ii. a decoder coupled to said input (FIG. 2, **162**, 'G.723.1');
- iii. a playout scheduler coupled to input (FIG. 2, **164**, col. 7, lines 37-41, '*The D/A converter 164 provides signal 165 to the second calling device 166 for playout.*'); and
- iv. said decoder operable to provide expansion of a voiced frame in response to said playout scheduler (col. 15, lines 63-66, '*the buffer changes state from the Normal state **354** to the Fill state **352** as shown in transition **358**. The objective of the Fill state is to bring the buffer depth back to the Normal state **354**.*'); and

v. wherein said decoder provides truncation of a frame in response to said playout scheduler only when said frame is a silence frame (col. 16, lines 8-10, *'The objective of the Drain state 356 is to shorten the silence periods and therefore reduce the buffer depth until it is returned to the Normal state 354.'*).

However, while **Schuster** does disclose expanding or filling frames, **Schuster** fails to, but **Chen** does, specifically disclose a packetized coding system wherein frames are filled using pitch characteristics (col. 19, lines 6-8, *'treat it as the pitch period, and periodically repeat the previous waveform at that pitch period to fill in the current frame of waveform.'*).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to include the teachings of **Chen** in the method of **Schuster** because it provides an adaptive codec that utilizes characteristics (e.g. pitch, pitch period, frame filling) that are common knowledge to one skilled in the art of speech coding in order to provide reconstructed speech while reducing coding complexity and delays (col. 3, lines 23-35).

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin W. Rider whose telephone number is (571) 270-1068. The examiner can normally be reached on Monday - Friday 7:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

J.W.R.
28 November 2007


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